



## PFAS - Industrial Pretreatment Programs Frequently Asked Questions (FAQ)

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## GENERAL PFAS QUESTIONS

### 1. What are Per- and polyfluoroalkyl substances (PFAS)?

Per- and polyfluoroalkyl substances (PFAS), sometimes called PFCs, are a group of man-made chemicals that are resistant to heat, water, and oil. They are not found naturally in the environment. For decades, PFAS have been used in many industrial applications and consumer products such as carpeting, waterproof clothing, upholstery, food paper wrappings, fire-fighting foams, and metal plating. They are still used today. PFAS have been classified by the U.S. Environmental Protection Agency (U.S. EPA) as an emerging contaminant on the national landscape. One characteristic that differentiates molecules of one PFAS from those of another is the *chain length*, or the number of carbon atoms, in the molecule. Longer chain length PFAS are generally thought to have increased risk of causing adverse health impacts and have been the focus of government and industry efforts to reduce exposure. PFAS have been found at low levels both in the environment and in blood samples of the general U.S. population.

## 2. What are PFOS and PFOA?

**PFOS** or perfluorooctane sulfonate is a specific chemical associated with AFFF fire-fighting foam, and demisters/defoamers/surfactants used by the plating industry to control air emissions of hexavalent chromium and as a wetting agent. It is persistent and bioaccumulative. It is a human health threat when ingested (in food or drinking water) and is of special concern for discharges to surface water because it bioaccumulates readily in some species of fish. The water quality standard is very low at 12 ng/l for lakes and streams not used as drinking water sources and 11 ng/l for those used as drinking water sources.

**PFOA** or perfluorooctanoic acid (also called “C8”) is a specific chemical associated with non-stick coatings for cookware and fabric treatments for stain- and water-repellency. It is a human health threat when ingested (in food or drinking water) and is of concern especially when contaminating sources of drinking water. It does not bioaccumulate as readily in fish as PFOS, so the water quality standard for lakes and streams not used as drinking water sources is relatively high (12,000 ng/l). If a lake or stream is used as a drinking water source, the water quality standard is much lower (420 ng/l).

## 3. Why should I be concerned about PFOS and PFOA?

People and animals worldwide have PFAS in their blood. Most people in the United States have one or more PFAS compounds in their blood, most frequently PFOA and PFOS. The National Health and Nutrition Examination Survey (NHANES) is a program conducted by the U.S. Centers for Disease Control and Prevention to assess the health and nutritional status of adults and children in the United States. Data from previous NHANES surveys show the levels of PFOA and PFOS are decreasing in the blood of the U.S. residents. This is most likely due to major manufacturers of PFOA and PFOS phasing out production of these two chemicals in the last decade and replacing them with other PFAS chemicals. New PFAS have been developed and are in use and may be less persistent in the environment. However, more scientific research is needed to determine if these new PFAS could be a health concern.

Some scientific studies suggest that certain PFAS may affect different systems in the body. The National Center for Environmental Health (NCEH)/Agency for Toxic Substances and Disease Registry (ATSDR) is working with various partners to better understand how exposure to PFAS might affect people’s health. Although more research is needed, some studies in people have shown that certain PFAS may:

- affect growth, learning, and behavior of infants and older children.
- lower a woman’s chance of getting pregnant.
- interfere with the body’s natural hormones.
- increase cholesterol levels.
- affect the immune system.
- increase the risk of certain types of cancers.

At this time, scientists are still learning about the health effects of exposures to mixtures of PFAS. For more specific information, see the United States Department of Health and Human Services Centers for Disease Control and Prevention report entitled [Fourth National Report on Human Exposure to Environmental Chemicals, Updated Tables, January 2017, Volume I](#).

#### 4. What is being done about PFAS on a statewide, multi-media basis?

The Governor has assembled a PFAS Action Response Team from ten state departments, including the Michigan Department of Military and Veterans Affairs (MDMVA), Michigan Department of Environmental Quality (DEQ) and the Michigan Department of Health and Human Services (MDHHS), that is tasked with protecting public health and the environment in regard to this issue. In communities that may have a PFAS presence in groundwater, the state has been collecting residential well data to determine if PFAS has entered residential drinking wells.

#### 5. Is the DEQ doing any kind of ambient water quality monitoring? Where is this data available or where will it be available?

Yes, there has been ambient monitoring in selected areas around the state since 2001. Follow up monitoring is continuing in targeted areas. The 2015 report [Michigan Department of Community Health Final Report, USEPA-Great Lakes Restoration Initiative Project, May 28, 2015](#), provides information on a project to measure perfluorinated compounds in Michigan surface waters and fish from September 1, 2012 to February 28, 2015.

#### 6. Is PFAS data that has already been collected by the DEQ from POTW effluent available?

Yes, limited data is available and is viewable by site via MiWaters Site Explorer. If you have questions about a specific POTW or POTWs in general, please contact your [IPP PFAS Regional Specialist](#).

#### 7. How are different states responding to PFAS? What are they doing?

A summary of the [activities of the \(U.S. EPA and other states\)](#) can be found on the U.S. EPA's web site at [www.epa.gov/pfas](http://www.epa.gov/pfas). Also, the Agency for Toxic Substances and Disease Registry has a link to site-related activities around the country at [www.atsdr.cdc.gov/pfas/atsdr\\_sites\\_involvement.html](http://www.atsdr.cdc.gov/pfas/atsdr_sites_involvement.html).

#### 8. What information is available to provide people regarding drinking water safety?

The U.S. EPA released a document called the "[Fact Sheet – PFOA & PFOS Drinking Water Health Advisories](#)." The fact sheet is available at on their [Drinking Water Health Advisories for PFOA and PFOS page](#).

#### 9. Will the DEQ post any information on wastewater treatment methods to the web site?

The DEQ intends to post studies of treatment technologies on our IPP Web page ([www.michigan.gov/ipp](http://www.michigan.gov/ipp)) as we become aware of them. Currently, the American Water Works Association has posted a [summary of water treatment technologies](#) on its web site.

#### 10. Are there any literature values for removal rates through POTWS?

The data we have seen indicate that very little (if any) removal of PFAS chemicals occurs as a result of conventional wastewater treatment.

### WATER QUALITY STANDARDS (WQS)

#### 11. What are the water quality standards for PFOS and PFOA?

The Michigan Rule 57 values or Water Quality Standards are developed to protect humans, wildlife, and aquatic life. The applicable (most stringent) Water Quality Standards for PFOS and PFOA are human noncancer values, as follows:

- PFOS: 12 ng/l (nanograms per liter or parts per trillion) for surface waters that are not used for drinking water and 11 ng/l for those used as a drinking water source
- PFOA: 12,000 ng/l for surface waters that are not used for drinking water and 420 ng/l for those used as a drinking water source.

Water quality standards have not been established for other PFAS.

## 12. What is the drinking water criteria for PFOS and PFOA?

The Michigan Part 201 [residential and nonresidential drinking water criteria](#) for groundwater are 70 ng/l (70 parts per trillion) for the combined concentrations of PFOA and PFOS. The criteria took effect January 10, 2018. The PFOA and PFOS drinking water criteria are the health advisory values as presented in the U.S. EPA Drinking Water Health Advisories for [Perfluorooctanoic Acid \(PFOA\), EPA 822-R-16-005](#), May 2016 and [Perfluorooctane Sulfonate \(PFOS\), EPA 822-R-16-004](#), May 2016. Compliance with the drinking water criteria requires comparing the sum of the PFOA and PFOS groundwater concentrations to the drinking water criteria of 0.07 µg/L. The drinking water criteria for PFOA and PFOS protect for both short-term developmental and chronic exposures.

## DEQ IPP PFAS INITIATIVE

### 13. What is the DEQ's legal authority to enforce the requirements of the IPP PFAS Initiative?

For NPDES permittees, Part I.C.1.f. requires permittees to prohibit discharges that cause their POTWs to pass through pollutants greater than water quality standards to surface water. Water quality standards have been established for PFOS and PFOA as described in Question 11 above. Part I.C.1.g. further prohibits NPDES permittees from accepting discharges that restrict, in whole or part, with their management of biosolids. These are current permit requirements. State Groundwater Discharge Permits have similar requirements. DEQ WRD is asking NPDES and Groundwater permittees to comply with these provisions for PFOS and PFOA. These are new pollutants to consider but the same requirements that IPPs have been complying with for many years.

In addition, DEQ WRD also has authority under the Part 23 Rules to require review of new pollutants: R323.2303 (4)(a)(ii) Each POTW that has an approved pretreatment program shall review and update the local limits... when new pollutants that are previously unevaluated are identified.

### 14. Who can I contact for questions about the IPP PFAS Initiative?

Please contact the IPP PFAS Specialist assigned to your area. See the staff location map available through the IPP webpage in the PFAS section: [http://www.michigan.gov/documents/deq/wrd-pfas-staff\\_614098\\_7.pdf](http://www.michigan.gov/documents/deq/wrd-pfas-staff_614098_7.pdf)

### 15. Are the POTWs required to participate in the IPP PFAS Initiative or is the DEQ requesting that they participate in the Initiative?

POTWs with Industrial Pretreatment Programs are required to participate in the IPP Initiative. See also Question 13 for legal authority.

### 16. When do POTWs need to monitor their effluent for PFAS?

If sources of PFOS and/or PFOA are found through source monitoring at values greater than the Water Quality Standards, you are required to sample your WWTP effluent for PFAS.

**17. If we find sources discharging PFAS greater than water quality standards, what do we do?**

You are required to work with the industry to reduce and/or eliminate PFOS and/or PFOA from their effluent. In addition, you are required to monitor your WWTP effluent for PFAS. We understand you would prioritize each source based on their contribution of PFAS to the POTW.

**18. If POTWs find PFOS and/or PFOA in their effluent above the WWQS, what might be required?**

These instances will be evaluated on a case by case basis. The first step would be to work with identified sources of PFOS/PFOA to reduce and/or eliminate those discharges (see Question 18). Additional monitoring, including biosolids may be required. The DEQ will send a letter to the POTW outlining the next steps the POTW will need to take.

**19. How should POTW's fund this effort? Will they ultimately charge the industries for sampling, or absorb the costs themselves? Are grants available?**

Unfortunately, grants are not available from the DEQ at this time. The effort may be funded as are other IPP costs, either by charging back costs to IUs, sewer fees, or local general funds.

**20. For the interim report, if the POTW conducts a survey, must they sample before June 29?**

Unless you have been approved for an extension by the DEQ, the sampling of probable sources is due by June 29, 2018.

**21. If the local drinking water source has detectable PFOS or PFOA that may contribute to pass-through to waters of the State, how should a POTW address it?**

This issue will likely require coordinated effort among various programs and government officials. Please document your findings and contact your Regional IPP PFAS Specialist.

**22. If a POTW conducts sampling at a point in the collection system that is "representative" and the result is non-detect, is that OK? Is no further sampling required?**

You can submit a request in MiWaters for an alternative monitoring plan which includes monitoring in your collection system instead of at your probable sources including your rationale for doing so. The DEQ will contact you to discuss your submittal.

**23. Will PFAS limits be put in NPDES Permits?**

Our strategy at this time is to reduce/eliminate PFAS at the source through implementation of this initiative. At this time, we cannot be certain, but permit limits may be a possibility in the future.

**24. What phase-in timeline does the DEQ envision for Industrial Users to come into compliance?**

The timing will vary depending on the PFOS/PFOA reduction/elimination approach(s) available to the SIU. In some instances, replacing the PFAS containing chemical with a non-fluorinated substitute may be feasible and sufficient. In other cases, the replacement of PFAS-containing chemicals may need to be followed by cleaning or replacing plating tanks, sumps and conveyances that contain residual PFAS chemicals. In some instances, the installation of treatment such as an ion exchange resin system or activated carbon filtration may be necessary. We will accept reasonable timeframes for these activities.

**25. Can the DEQ comment on what enforcement should look like for an Industrial User who's discharge exceeds the water quality standards for PFOS/ PFOA even though EPA has not approved a testing method?**

Our expectation is that POTWs will work with their IUs to reduce and eliminate sources of PFOS and/or PFOA or provide pretreatment if needed. DEQ WRD does not expect WWTPs that identify sources of PFAS to force certain users out of their systems. Instead, we encourage WWTPs to take a systematic

approach, working with their users, the DEQ and other partners to evaluate options for reducing or treating sources of PFAS and to use the IPP process to ensure that water quality and public health are protected.

**26. If data is collected for all 24 preferred analytes, must we submit all the data and what will be done with the information? Is it FOIA-able?**

Submittal of the PFOS and PFOA results is required. We are asking that all the PFAS analytical results be submitted but only PFOS and PFOA require follow-up actions by the February 20, 2018 letter. Currently, there are only water quality standards for PFOS and PFOA in Michigan. The data that is submitted will be available under FOIA.

**27. What does follow-up probable source monitoring look like?**

This will be evaluated on a case-by-case basis, but in general we anticipate follow-up monitoring will occur at a frequency appropriate to demonstrate the discharger's progress in the PFOS/PFOA reduction and elimination effort.

**28. How would you compare this initiative to Mercury for long term efforts?**

We anticipate that the source reduction/elimination effort will be similar to the Pollutant Minimization Program for Mercury that many IPP control authorities have been implementing in that solutions may not be easy, and progress may be incremental. There are differences, however, including the additional complexity created by PFAS precursor chemicals that may convert to PFOS or PFOA under certain conditions.

**29. Are the manufacturers assisting with this effort?**

U.S. manufacturers committed to voluntarily phasing out the manufacturing of PFOA and PFOS completely by 2015. However, concerns remain regarding alternative/replacement chemicals, especially those that may contain precursors to PFOS and PFOA. DEQ is working with a number of interested parties regarding PFAS issues and has had a number of discussions with manufacturers regarding PFAS issues.

## SOURCE EVALUATION QUESTIONS

**30. How do we figure out which sources are *potential* and *probable* sources?**

Our expectation is that you will conduct a desk evaluation of your SIUs and any IUs that may discharge PFAS such as metal finishers, landfills, centralized waste treaters, tanneries, fabric treaters, chemical companies or any other SIUs that you suspect may discharge PFAS. These SIUs would be considered your *potential sources*. All should be screened for whether they have used or produced chemicals containing PFAS, particularly PFOS and PFOA or their precursors.

Those SIUs found to use, previously used (even many years ago) or generate PFAS in the manufacture of their products would be considered *probable sources*. PFAS are emerging pollutants that we are still learning about, and unfortunately, we cannot provide a definitive list of sources. The following describes what we currently believe are probable sources that should be monitored (sampled and analyzed) for PFAS. Note that due to the heavy and sticky nature of PFAS, especially the longer chain chemicals such as PFOS, residual chemicals may be found many years after they have been used.

- Chrome platers regulated under 40 CFR Part 63 Subpart N, which have used surfactants/demisters/ defoamers for air pollution control in chrome electroplating tanks.



- Decorative chrome platers of plastic parts are probable sources due not only to the air quality regulations but also the etching tanks used prior to the plating process to prepare the parts to accept the decorative metal layers.
- Platers using hexavalent chromium in their process are likely to use or previously have used PFOS-containing products for air pollution control.
- Other types of platers have used PFAS containing chemicals.
- Some paper and packaging manufacturers use PFAS coatings or treatments for oil and moisture repellency.
- Tanneries or fabric treaters that use or create water- or stain-resistant materials.
- Landfills that have accepted industrial wastes associated with the types of metal finishers described above.
- Centralized waste treaters that have accepted wastes from the industries listed above.
- Historical dumping of industrial wastes with PFAS, AFFF (aqueous film-forming foam for fire suppression - training sites especially), and manufacturing sites where PFAS were used may be a concern to WWTPs if contaminated groundwater is discharged to WWTPs through groundwater cleanup discharges or infiltration to the sanitary sewers.

We will share what we learn as we go through the process of screening and monitoring sources.

**31. Are POTW's required to investigate sources other than the significant industrial sources that have already been identified?**

The letter requires POTWs to investigate any potential sources of PFAS, including known sources other than those types specifically identified. If you have questions about a potential source, please contact your IPP PFAS Regional Specialist.

**32. Will PFAS show up on Safety Data Sheets (SDS) forms? If listed on the SDS, at what level will it be of concern (make the industry a probable source)?**

PFAS may show up on Safety Data Sheets (SDS) or Material Safety Data Sheets (MSDS). Sometimes we have seen it listed as "fluorinated surfactants" or "organic fluorosulfonate." Since small concentrations of these pollutants are important, any amount listed would make the industry a probable source. However, some SDS Sheets will not list the chemical because they are proprietary chemicals. The POTW should require the industrial user to contact the supplier to find out if a product contains PFAS.

**33. If a landfill has accepted any biosolids should they be considered a probable source?**

There is no evidence to suggest that landfills accepting biosolids are probable sources. More data on landfill leachate will become available through the WMRPD initiative.

**34. Has the DEQ discovered any differences in the concentrations of PFOS/PFOA released between the different industries? For example, how much of the chemical can we expect to be coming from landfills vs. platers?**

We do not have PFAS data comparing different industries and percentage contributions by industry at this time, but there are studies available that relate to this issue including the following:

- [The U.S. EPA Region 5, where a number of chromium platers using mist suppressants were evaluated \(www.in.gov/idem/ctap/files/plating\\_chromium\\_pfos\\_study.pdf\)](http://www.in.gov/idem/ctap/files/plating_chromium_pfos_study.pdf)
- The Interstate Technology Regulatory Council (ITRC) fact sheets, including one named "[History and Use of Per- and Polyfluoroalkyl Substances \(PFAS\)](#)" that includes an excellent summary of major sources of PFAS in manufacturing processes:

- The Swedish Chemicals Agency, KEMI, published an in-depth report in 2015 called “[Occurrence and use of highly fluorinated substances and alternatives](https://www.kemi.se/download/18.6df1d3df171c243fb23a98ea/1591454109137/report-7-15-occurrence-and-use-of-highly-fluorinated-substances-and-alternatives.pdf)” (<https://www.kemi.se/download/18.6df1d3df171c243fb23a98ea/1591454109137/report-7-15-occurrence-and-use-of-highly-fluorinated-substances-and-alternatives.pdf>) that in Chapter 6 gives very detailed descriptions of PFAS uses in manufacturing.
- The United Nations Environment Programme has a very readable paper called the “[Synthesis Paper on Per- and Polyfluorinated Chemicals \(PFCS\)](http://www.oecd.org/env/ehs/risk-management/PFC_FINAL-Web.pdf)” ([www.oecd.org/env/ehs/risk-management/PFC\\_FINAL-Web.pdf](http://www.oecd.org/env/ehs/risk-management/PFC_FINAL-Web.pdf)) from 2013 that describes history and current uses of PFAS in Chapter One. It covers more industry branches than the Kemi report, in less detail, and provides a good summary of PFAS uses, exposure routes, alternatives to long chain PFAS chemicals and it lists hundreds of reference studies and reports if you want to look for more detail.
- In a study published by the American Chemical Society (ACS), PFOS/PFOA were found greater than EPA lifetime health advisory (70 ng/l) in public drinking water sources for 6 million US residents. In this broad-brush study, they looked at a variety of potential predictors of contaminated water supplies. The number of PFOS/PFOA manufacturers, military fire training areas, and WWTPs in watersheds were significant predictors of PFAS detection in public water supplies.

**35. While the POTW is working to determine their source facilities, what standards should they use to determine if an Industrial User is a source?**

IUs should be considered sources if they have greater PFOS and/or PFOA than the water quality standards for their receiving stream. See Question 11 for a discussion of applicable water quality standards. Note that POTWs will need to subsequently determine if these sources are significant.

**36. If we have a sample result that shows less than water quality standards for PFOS and PFOA in POTW effluent, do we still need to evaluate potential sources of PFOS and PFOA?**

Yes. Since PFOS is bioaccumulative and sources may be obscured by dilution, it is still important to evaluate PFOS sources and eliminate them as much as possible. The loading to our lakes and streams is ultimately what will result in bioaccumulation in our fisheries. Effluent results may vary over time. Having less than the water quality standard in your effluent will, however, provide your WWTP with much more flexibility in responding to any sources of PFOS and/or PFOA found. See also Question 13 for legal authority.

**37. What are next steps if no potential sources are found during the initial screening?**

You are required to submit your evaluation along with documentation in the Interim Report due on June 29, 2018. If the DEQ agrees with your assessment, you will be notified in writing that no further action will be needed.

**38. Is the POTW responsible for testing potential sources in their geographic boundaries that have NPDES Permits and do not discharge process wastewater to the POTW?**

No. However, if you suspect a potential source is a probable source due to past or current use of PFAS containing chemicals please notify your IPP PFAS Specialist.

**39. We have a number of plating shops that shut down 10 or more years ago. Some of the buildings are vacant, some have been repurposed, some torn down. Do we have to sample them?**

If you have reason to believe these sources used chemicals containing PFAS and the PFAS containing chemicals may be discharged to the sanitary sewer, then they should be added to the list of probable sources to be sampled.

**40. If a discharge from a site believed to be contaminated with PFAS can infiltrate a sanitary sewer line, would this area be considered a potential source? Should the monitoring wells on that site be tested?**

Yes, PFAS contaminated sites should be identified as potential sources if inflow or infiltration in nearby sanitary sewers has the potential to transport these pollutants to WWTP. It is recommended that you contact DEQ staff with knowledge of these sites to determine if PFAS have been associated with site contamination. Monitoring well data may be useful in making such determinations. If PFAS have been identified as site contaminants AND if inflow or infiltration into the nearby sewers occurs a representative downstream location in the collection system should be sampled and an alternative monitoring plan should be proposed for the site.

**41. One case study showed historical firefighting sites as sources of PFAS. How do POTWs identify the locations of incidents where firefighting foam was used?**

In our case study, the local fire department was contacted and was able to identify the foam that was used. They had a MSDS on file along with the quantity used. Inflow and infiltration into the sanitary sewers from known firefighting sites where AFFF was used should be factored into the probable source determination.

**42. Has PFAS/PFOA been found in industrial laundries?**

We are not aware of any specific reports concerning industrial laundries being significant sources, but they may have the potential to discharge PFAS depending on the source(s) of the laundered materials and the chemicals used. Several industrial laundries that we are aware of being sampled were not found to be a significant source of PFOS. Please screen laundries as potential sources on a case by case basis.

**43. If a landfill has never accepted industrial waste would they be considered a probable source?**

No. Most landfills will have some PFAS due to disposal of consumer products, but under this initiative we are asking you to look for significant sources, which would include landfills receiving industrial wastes from metal finishers, leather/fabric treaters, and other sources where there would be concentrated chemicals. If a landfill has good records indicating that it does not and has not historically accepted wastes from significant sources they do not need to be considered a probable source.

**44. Do PFAS and PFOA chemicals stay in the pipes and tanks for a long time before they move through the system?**

In our experience, PFAS chemicals tend to persist in plating tanks, treatment tanks, sumps, air pollution control equipment and piping conveyances for some time after their use has been discontinued.

**45. Do wrinkle resistant clothing contain PFOS/PFOA?**

Although chemicals used vary by manufacturer, PFAS are generally not used to make fabrics wrinkle-resistant.

**46. Is the DEQ Remediation and Redevelopment Division (RRD) completing any of their own sampling at contaminate sites?**

Yes, the state is beginning the process of reviewing and sampling contaminated sites that may contain PFAS. If you have questions about a specific site, please contact your District IPP staff who can identify the appropriate project manager.

## SAMPLING QUESTIONS

### 47. What method should be used for PFAS analysis?

Currently, there are no U.S.EPA-approved methods for PFAS analysis of wastewater or biosolids. You may use either ASTM D7979 or an isotope dilution method. Either of these methods is a scan for a list of PFAS that the particular laboratory chooses to analyze. Be sure that results for both PFOS and PFOA are reported and that quantification levels are less than the applicable water quality standards. A suggested list of analytes that should be reported for PFAS monitoring in effluent is posted to the [www.michigan.gov/IPP](http://www.michigan.gov/IPP) webpage.

### 48. What is the holding time on the sample?

The holding time will depend on the analytical method and/or laboratory chosen. Always request and follow the instructions provided by your laboratory and confirm the holding time and any other special sample handling procedures they require.

### 49. What laboratory should we use for PFAS analysis?

You should use a laboratory that you believe implements a good Quality Assurance/Quality Control program for PFAS analysis of wastewater. Please see the [analytes list](#) posted at [www.michigan.gov/ipp](http://www.michigan.gov/ipp) to find a laboratory. The website link is below - Scroll down, and on the second page you'll see a link to Department of Defense (DOD) and EPA lists of laboratories. The isotope dilution method (commonly referred to as EPA Method 537 (modified)) and ASTM D7979 can be used to analyze biosolids. [https://www.michigan.gov/pfasresponse/0,9038,7-365-88059\\_95747--,00.html](https://www.michigan.gov/pfasresponse/0,9038,7-365-88059_95747--,00.html)

### 50. Are most labs that can test water samples for PFOS/PFOA able to test biosolid samples? Most labs that can test wastewater samples for PFAS will likely be able to analyze biosolids for PFAS, but you will need to check with individual laboratories.

### 51. Will the DEQ laboratory be performing this analysis?

Currently, the DEQ laboratory is not analyzing wastewater samples for PFAS.

### 52. What do you do when you have a more complex effluent with matrix interferences and high dilution?

Please consult with your chosen laboratory regarding their capabilities for the specific wastewater you are sampling. We understand that some wastewater may pose challenges to laboratories. You may wish to consult more than one laboratory and consider which method is best for the particular effluent.

### 53. Do you want us to sample for all of the PFAS on the suggested analyte list?

Currently, Michigan only has water quality standards for PFOS and PFOA. The rest of PFAS analytes on the list are recommended for analysis but not required. The list reflects draft EPA analytes. It also reflects contaminants that have been found in Michigan's environment, but is not an exhaustive list of PFAS chemicals in Michigan's environment. More PFAS analytes, including some from the list, may emerge as precursors to PFOS and/or PFOA or contaminants of concern in the future. The suggested analyte list can be found here: [https://www.michigan.gov/pfasresponse/0,9038,7-365-88059\\_95747--,00.html](https://www.michigan.gov/pfasresponse/0,9038,7-365-88059_95747--,00.html)

### 54. Who is responsible for conducting the sampling, the industrial user or the POTW?

We recommend the POTW conduct the sampling of the industrial user so that the quality of the sampling process is known. However, we understand that many communities will charge back the cost of sampling to their users. If POTWs request sampling by the industrial user, they must require them to use sampling techniques that will not cause cross contamination.

**55. You mentioned not requiring Quality Assurance (QA) samples with screening samples, but these samples determine future actions. Can we do the QA samples in the screening phase, although ?**

You may collect and analyze QA samples as part of this IPP PFAS effort if you wish. We are not requiring the addition of QA samples because the probable source sampling activity is mainly an attempt to screen suspected sources. Also, we recognize that adding QA samples will increase costs. We anticipate that EPA will approve a method for wastewater in the near future. At that time, it is expected that all appropriate QA/QC will be performed.

**56. If the analytical method that is eventually approved by EPA is not the method we used, will we have to go back and re-do our initial sampling?**

No. If you developed an acceptable sampling plan and used either ASTM D7979 or the isotope dilution method sometimes referred to as EPA Method 537 (modified), you will have complied with DEQ's sampling requirements for this effort. When a new method is approved by EPA all subsequent sampling shall be performed utilizing that method.

**57. Why not wait until there is an approved method?**

It is a public health concern and has already caused fish consumption advisories. See also Question 3.

**58. What will happen when WRD completes their Sampling Procedure (SOP)?**

Once completed it will be posted on the MDEQ IPP website.

**59. What is the best clothing to wear while sampling for PFAS?**

The following types of clothing are considered best to wear while sampling for PFAS:

- Cotton or synthetic clothing without stain- or water-resistant coatings
- PVC or wax-coated clothing, neoprene
- Old, well-laundered clothing
- Powderless nitrile gloves
- Polyurethane or PVC boots or PFAS-free overboots

However, use common sense. What matters most is what may come into contact with the sample. Safety first.

## **POTW & BIOSOLIDS QUESTIONS**

**60. If the POTW decides to test the biosolids for due diligence and discover detectable amounts of PFOS or PFOA, would this affect the land application?**

There are no established biosolids standards for PFAS at this time, but significant concentrations of PFOS and/or PFOA found in biosolids may impact a POTW's ability to land apply. At this time, biosolids results will be handled on a case by case basis.

**61. Is the analytical method to test biosolids different than for waste water samples?**

Both methods currently used for wastewater analysis may also be used for biosolids analysis. EPA is in external validation process for ASTM D7979 LC/MS/MS (liquid chromatography tandem mass spectrometry) and method may be used for both wastewater and biosolids. The widely-used isotope dilution method as specified by the U.S. Department of Defense, often called "EPA Method 537(modified)" may also generally be used for both wastewater and biosolids, although since this is not a published method its scope may vary, so please check with your laboratory.

## LANDFILL QUESTIONS

**62. How does the sampling SOP for leachate (still not finalized) effect the timeline for POTWs to respond by June 29?**

The DEQ Waste Management and Radiological Protection Division (WMRPD) is developing a plan in coordination with the landfill industry to assist them with evaluating, minimizing, and treating PFAS in their leachate, if necessary. As part of this effort, the WMRPD is developing a plan and schedule with industry partners to sample and report leachate data from landfills and provide that data to IPPs and the DEQ. Participating landfills will arrange for sampling their leachate and will follow DEQ recommended sampling protocols and standard operating procedures (SOP). The DEQ will be asking stakeholders for comment on the draft protocols and SOPs for sampling leachate. The DEQ recognizes that landfills participating in this initiative may not have data available to report until after October 1, 2018.

**63. One solution that has been proposed is to put PFOS/PFOA into landfills. Will that have a cyclical effect? And will certain landfills decide not to accept it?**

There is certainly the potential for cross media contamination and we cannot predict how various stakeholders will respond to this challenge. However, DEQ WRD does not expect WWTPs that identify sources of PFAS to force certain users out of their systems. Instead, we encourage WWTPs to take a systematic approach, working with DEQ and other partners to evaluate options for reducing or treating sources of PFAS and to use the IPP process to ensure that water quality and public health are protected

## OTHER RESOURCES

Michigan PFAS Action Response Team (MPART) Web site: [www.michigan.gov/pfasresponse](http://www.michigan.gov/pfasresponse)

Michigan Industrial Pretreatment Program Web site: [www.michigan.gov/ipp](http://www.michigan.gov/ipp)